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DEVELOPMENTS IN SMALL-SCALE MINING

Report of the Secretary-General

SUMMARY

The present report has been prepared in response to Economic and Social Council decision 1994/308. The report reviews employment estimates in small-scale mining, and using examples from Africa, Asia and Latin America, describes the economic impact of small-scale mining on selected countries. It analyses new approaches and developments, focusing on the roles of Governments, the private sector, foreign capital, joint ventures, non-governmental organizations, lending institutions, local communities and women, and provides examples of the strategies that have been implemented. The report also reviews recent developments in the wake of conferences in the areas of health and safety, industrial minerals and artisanal mining, and summarizes the World Bank draft comprehensive strategy toward artisanal mining.

The report concludes by recommending that artisanal mining in developing countries and countries with economies in transition be viewed not only as a mining issue that requires mining expertise but also as a poverty and socio-economic issue that requires attention on a multisectoral level. The report calls for technical assistance in mining, as well as assistance in such areas as alternative income-generating activities, education, health and the advancement of women.

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CONTENTS

	Paragraphs	Page
INTRODUCTION	1 - 4	3
I. SMALL-SCALE MINING IN THE ECONOMIES OF DEVELOPING COUNTRIES AND ECONOMIES IN TRANSITION	5 - 32	4
A. Employment estimates	5 - 10	4
B. Economic impact of small-scale mining: selected examples from Africa, Asia and Latin America	11 - 32	6
1. Africa	11 - 19	6
2. Asia	20 - 26	7
3. Latin America	27 - 32	9
II. ANALYSES OF NEW APPROACHES AND DEVELOPMENTS	33 - 62	10
A. Government	33 - 42	10
B. The private sector, foreign capital and joint ventures	43 - 49	12
C. Non-governmental organizations and lending institutions	50 - 53	13
D. Local communities	54 - 57	14
E. Women	58 - 62	14
III. RECENT RESULTS OBTAINED IN SPECIFIC AREAS OF ACTIVITY	63 - 78	16
A. Safety and health in small-scale mines	63 - 71	16
B. International conference on small-scale mining business in the north-western Russian Federation and international experience	72 - 73	17
C. International round table on artisanal mining and the World Bank comprehensive strategy towards artisanal mining	74 - 78	18
IV. CONCLUSION AND RECOMMENDATIONS	79 - 84	19

INTRODUCTION

1. In its decision 1994/308 and upon the recommendation of the Committee on Natural Resources at its second session (22 February-4 March 1994), the Economic and Social Council requested the Secretary-General to submit to the Committee at its third session a report on developments in small-scale mining. The Committee recommended that the report include an evaluation of the importance of small-scale mining in the economies of developing countries and the economies in transition, as well as an analysis of new approaches and developments, focusing on the roles of local communities, the private sector, foreign capital and joint ventures, and also highlighting recent results obtained in specific areas of activity.

2. The present report is part of a continuing assessment of the field of small-scale mining by the Committee on Natural Resources. It addresses particular issues of small-scale mining, as recommended by the Committee in response to the report of the Secretary-General on small-scale mining activities in developing countries and economies in transition (E/C.7/1994/9). That report reviewed the environmental and social impacts of small-scale mining in selected regions; small-scale mining legislation and regulations concerning environmental protection; replicable small-scale mechanized mining operations; health and safety and the improvement of miners' working conditions; and the position and role of women in small-scale mining. It concluded that small-scale mining, particularly artisanal mining, had become a mainstay of many rural economies, and that a legal framework that recognized the characteristics of that type of mining was a prerequisite for formalizing the subsector and limiting its negative environmental impacts. Serious efforts were needed in (a) small-scale mining regulation and promotion, particularly to mitigate environmental damage, minimize social upheavals and curb smuggling; (b) institutional and capacity-strengthening; and (c) technology transfer. The report suggested that the Committee might wish to recommend that the United Nations system, according to its mandate and field of expertise, continue to better focus its activities in those areas.

3. A significant event in the field of small-scale mining since the second session of the Committee was the holding of an international round table on artisanal mining in May 1995, hosted by the World Bank in Washington, D.C. Following the precedent set for small and medium-scale mining by a United Nations interregional seminar on the theme "Guidelines for the development of small/medium-scale mining" (Harare, 1993), the round table had as an objective the development of a consensus for an appropriate strategy for the orderly, safe and environmentally sustainable development of artisanal mining. Based on the conclusions and recommendations made by the round table, the World Bank has subsequently proposed an assistance strategy, focusing on legal and technical actions, that emphasizes a partnership with international organizations, non-governmental organizations, government entities, artisanal miners and international mining companies.

4. The present report aims to address the issues requested by the Council. Section I describes the importance of small-scale mining for the economies of developing countries and economies in transition, both in terms of global

employment and based on country examples from Africa, Asia and Latin America. Section II analyses new approaches and developments in small-scale mining including the role of local communities, the private sector, foreign capital and joint ventures. Section III reviews reports on recent results obtained in specific areas of activity, as well as a discussion of the Convention on Safety and Health in Mines and an international round table on artisanal mining, for which the contribution of the International Labour Office (ILO) is gratefully acknowledged. 1/ Section IV contains conclusions and recommendations.

I. SMALL-SCALE MINING IN THE ECONOMIES OF DEVELOPING COUNTRIES AND ECONOMIES IN TRANSITION 2/

A. Employment estimates

5. Small-scale mining, particularly artisanal small-scale mining, is a labour-intensive activity that has seen a world-wide resurgence over the past 25 years. It provides employment to a significant number of people, most of whom live in remote areas where there are few other well-paid job opportunities. People working in small-scale mining, particularly artisanal miners, are generally unskilled labourers with little if any formal education. The average incomes earned from mining, however, are usually higher than subsistence wage levels, and are often higher than incomes paid in comparative formal employment in other sectors of the economy.

6. A summary of small-scale mining employment in selected countries for which estimates are available is provided in the table.

7. In the estimates provided in the table, a distinction has not been made between small mechanized mining and artisanal mining; it is recognized, however, that most of the people employed in the sector are employed in artisanal mining. In addition, given that much artisanal mining takes the form of informal or illegal activities, there is often a lack of reliable data. As a result, the estimates contained in the table are considered to be conservative.

8. Based on the world total provided in the table, the number of people active in small-scale mining world wide exceeds 6 million - more than 20 per cent of those active in the industry as a whole. If it is assumed that there are on average four additional family members per worker (a conservative assumption), then over 30 million people depend directly on artisanal and small-scale mining for their economic livelihood. If nine additional family members per worker are assumed as an upper estimate, the total increases to over 60 million people.

9. Of the more than 6 million people active in small-scale mining, a significant number are women. In many high-density artisanal mining districts, the percentage of females ranges from 10 to 50 per cent of the workforce. Women often work long hours as ore and concentrate carriers, panners, ore sorters or cooks, and most of them are also engaged in child-rearing.

Small-scale mining employment

(Thousands of workers employed)

Country	Estimated employment	Data source a/
China	3 000	Jennings (1993)
Brazil	1 000	Davidson (1990)
India	500	Chakravorty (1989)
Zaire	500	Jennings (1994)
Indonesia	465	ILO (1990)
Philippines	250	Muyco (1993)
United Republic of Tanzania	100	Noetstaller (1994)
Mali	100	World Bank (1992)
Sierra Leone	100	World Bank (1992)
Bolivia	70	Priester (1996)
Burkina Faso	60	World Bank (1992)
Guinea	60	World Bank (1992)
Ghana	30	World Bank (1992)
Angola	30	World Bank (1992)
Zambia	30	World Bank (1992)
Zimbabwe	30	World Bank (1992)
Peru	20	ILO (1990)
World total	6 345	Jennings (1993)

Source: Noetstaller (1995), with additions from Muyco (1993) and Priester (1996) (see references at end of text).

a/ See references at end of text.

10. In the case of artisanal mining, a particularly unfortunate and unacceptable phenomenon is the use of child labour, usually in extremely poor areas where families depend on their children's pay as part of the household income. Because of their smaller size, child labourers are used to mine hard-to-reach deposits, haul ore or concentrate, or assist in preparing food. Due to the illegality of child labour and the remoteness of the areas in which

it is prevalent, estimates on the number of children engaged in such activities are not readily available.

B. Economic impact of small-scale and artisanal mining: selected examples from Africa, Asia and Latin America

1. Africa

11. Small-scale mining employment and activities in Africa have increased substantially during the last 15 to 20 years. One reason for the resurgence was the crisis in the mining industry of the 1970s and 1980s, when there was a strong reduction in the demand for mineral raw materials, drastic falls in mineral prices and a strong decline in investment in large-scale mining operations. During this crisis, many African countries saw small-scale mining as a means to diversify their mineral production and reduce their dependence on one mineral for export revenues, a dependence that had painful fiscal implications during the declines in mineral prices. Another advantage of developing small-scale mining was that it required less rigorous financial and technical conditions and therefore had less substantial initial investment costs.

12. A second reason for the resurgence of African small-scale mining, leading particularly to an increase in artisanal mining, was the effect of natural disasters, particularly the droughts of 1973-1975 and 1984-1985 in southern Africa. Those droughts led many rural populations, whose crops had been decimated, to find other sources of survival. Artisanal mining gave many of them a relatively rapid income, and with its high labour intensity, provided an answer to underemployment. It also reduced the amount of rural to urban migration that would have taken place had that alternative not existed.

13. Although there is a large variety of minerals mined, they can be generally divided into four major groups: precious and semi-precious minerals, including gemstones; heavy minerals; industrial minerals; and base minerals. Of the four groups, the majority (58 per cent) of small-scale mining activities are in the precious and semi-precious minerals group, with gold being the most important, making up 52 per cent of the precious and semi-precious minerals mined (see NRD/MRU/TP/1/92).

14. At the country level, the economic impact of small-scale mining can be very significant. In Zimbabwe, gold is important for the country's economic well-being, contributing, on average, 36 per cent of mineral export earnings since 1986. The number of small-scale miners, comprised of single owners or cooperative producers, has increased significantly since 1980. The contribution of the small-scale mining sector to official gold output has risen dramatically in the early 1990s, from 5 per cent in 1988-1989 to about 30 per cent in 1993 (see UNCTAD/COM/45, pp. 11-12). The rise in the sector's official contribution is mainly due to the steps taken for the formalization of the originally illegal miners.

15. In addition to the formalized small-scale miners, there are also many illegal miners, such as alluvial gold panners, many of whom are working to

complement other sources of interest. Not all production from such illegal activities is accounted for, since most of the output is lost to the parallel market, which is estimated to have lost the country an estimated 100 million Zimbabwe dollars (15.4 million United States dollars) in foreign exchange in 1992 (see UNCTAD/COM/45, p. 13).

16. Ghana has also taken several steps to formalize small-scale mining. In 1989, small-scale mining was legalized through the Small-Scale Mining Project; since then, 30,000 artisanal miners have brought in US$ 68.56 million in gold and US$ 71.5 million in diamonds during the period 1989-1994 (Nyameke, 1995). Many of the deposits worked were abandoned waste dumps, the value of which would not have been realized without the resourcefulness of the artisanal miners.

17. In the United Republic of Tanzania, the economic significance of artisanal mining has increased rapidly since the implementation of a mineral trade liberalization policy in the late 1980s, which introduced private mineral dealers and allowed semi-legalized artisanal mining in new mine-rush areas. The contribution of the mineral sector to gross domestic product (GDP) increased from 0.4 per cent in 1987 to 1.5 per cent in 1994, an average increase of 24 per cent per year (United Nations, 1993). Government revenues from such activities have increased, along with employment levels and the income of the mainly rural people directly involved in mining. The minerals most favoured by artisanal miners are gold, diamonds, salt and such industrial minerals as mica and gypsum.

18. In some countries, small-scale mining is the dominant or only form of mining of certain minerals. In the Central African Republic, where gold and diamonds make up the totality of the mineral exports, 100 per cent of the gold production and 90 per cent of the diamond production is carried out by artisanal miners. This is a significant contribution to the Central African Republic's economy, where diamond exports alone were valued at 2,133 million CFA francs (US$ 4,350 million), or approximately 8 per cent of total national export revenues (Bocoum and Samba, 1995).

19. In Guinea, the national share in gold production of small-scale mining was 66 per cent in 1990, 74 per cent in 1991 and 78 per cent in 1992. In 1993, it represented almost 100 per cent of national production, since the activities of the only medium-scale production were interrupted in 1992 with a view to restructuring and seeking new partners. In the case of diamonds production, the share of small-scale mining in national production was approximately 52 per cent (United Nations, 1993).

2. Asia

20. Small-scale mining is prevalent in many countries in Asia, with over 4 million people working in this sector in China, India, the Philippines, Indonesia, Malaysia and other countries.

21. In China, as of 1992 there were 167,351 privately run small-scale mines, of which 82,921 cover coal, metals and building construction material, with the other 84,430 mines in clay and quarry for the construction of highways, railway

lines and irrigation projects (Jin, 1995). A large proportion of the small-scale mining is coal mining. From 1980 to 1988, the annual output of coal produced from small-scale coal mines, including coal mines run by prefectures, counties, towns, villages and individuals, doubled to a level of 520 tons, accounting for 53.6 per cent of the total national output. During that same period, the total number of local coal mines increased from 20,000 in 1980 to over 80,000 in 1988, of which 79,000 mines were run either jointly or independently by counties, towns and individuals (see TCD/NRED/E.13, p. 23). The growth was encouraged by a series of policies implemented during that period by the Chinese Government, including a relaxing of control on ownership, technical support, and preferential treatment for taxes and interest on loans. More recently, however, due to environmental damage from the small-scale mines and serious concern about mine safety, the Government has been scaling back the preferential treatment.

22. In the Philippines, there are an estimated 250,000 or more miners employed in small-scale mining, spread out in almost half its 80 provinces (Muyco, 1993). Legislation and incentives introduced in 1984 and 1991 to promote the development of the small-scale mining sector through land and mineral rights reform have opened up new reserves, provided rural employment and stimulated rural development.

23. Some problems that the Government has encountered, however, include black markets and the associated lack of tax revenues from small-scale producers who do not officially declare their production. In 1992, official production from small-scale operations accounted for just over 25 per cent of the national gold output of 29,138 kilograms (kg). The unofficial production, however, is even greater. According to a government study, the actual total gold production by small-scale mines in 1989 was estimated to be more than 26,000 kg, whereas the official total for that year was 8,228 kg (Mining Journal, 1995). It is also difficult for taxes to be collected from the official output due to the remoteness and inaccessibility of mining areas, security problems, and the rapid mobility of the miners.

24. Small-scale mining in the Philippines is also active in the mining of metallurgical chromite ore, producing 221,000 metric tonnes in 1989 to 1990, 90 per cent of the country's total metallurgical chromite output (Muyco, 1993). There is also a small-scale mining interest in non-metallic deposits, such as marble and other stone building materials, clay deposits and industrial minerals.

25. In India, small-scale mining plays a very significant role in the national economy. Of the approximately 60 minerals mined in India, 38 are mined uniquely in small mines from small deposits that are located all over the country, and 85 per cent of the 4,200 mines that report to the Government are small mines. Employment in all small mines, both those that report to the Government and those that do not (of which there are an estimated 4,000 to 5,000), is projected to be approximately 500,000 miners (Chakravorty, 1994).

26. In total, 36 per cent of all non-fuel mineral production in India comes from the small mining sector, where small-scale mines are classified as those producing up to 100,000 tonnes per year. The small-scale sector accounts for

15.5 per cent of limestone production, with 85 per cent of the number of mines being small mines; 9.5 per cent of iron ore production, with 80 per cent of the mines; more than 13.6 per cent for bauxite, with 93 per cent of the mines; and more than 60.5 per cent for manganese, with 97 per cent of the mines. As for other minor minerals, small-scale mining is responsible for about 70 per cent of the national production. In addition, the small-scale mining sector provides 36.9 per cent of mineral export earnings, and contributes an estimated 0.17 to 0.20 per cent to the Indian gross national product (GNP) (Chakravorty, 1994).

3. Latin America

27. It is estimated that there are over 1 million small-scale and artisanal miners operating in Latin America, with the bulk of them in Brazil, Bolivia, Venezuela and Chile. In production and employment, small-scale mining forms a major and, in certain countries, predominant component of the mineral industry, as can be seen from the following examples.

28. In Brazil, between 1979 and 1994 845 tons of gold was extracted by garimpeiros (small-scale/artisanal informal miners), mostly from the Amazon region. Of the total Brazilian gold output to date, garimpo (small-scale/artisanal informal mining) activity has contributed 2,650 tons, or approximately 78 per cent of the total. Average annual production rose from 5 tons per year in 1970 to a high of 78 tons per year in 1990, which was the major factor behind the production growth rate of 13 per cent during the period 1969-1990, the highest in the western world. Income derived from this activity reached segments of the population other than the miners themselves, and indirect employment is estimated to be of the order of 2 to 4 million people (Arantes, 1995).

29. Recently, patterns of production have been changing: increasing operating costs, falling gold prices and the exhaustion of alluvial reserves have significantly reduced garimpo activities since 1989. Average annual production has dropped from an average of 72 tons in 1983-1989 to 38 tons in 1990-1994 (Arantes, 1995).

30. In Chile, artisanal miners extract US$ 10 million worth of copper, gold, silver, zinc and lead, while the more organized small-scale producers have outputs of US$ 40 million of those metals in raw form and US$ 139 million in ore concentrates. There are estimated to be 8,000 highly transient artisanal miners; however, this number varies widely, depending on season, alternative work opportunities and metal prices. The average income for an artisanal miner is $150-230 per month, yet the miners live under poor social and economic conditions that obstruct the success of assistance programmes based only upon productivity increases (Astorga, 1993).

31. In Bolivia, employment in small-scale mining is approximately 70,000 workers, of whom about 50,000 are affiliated cooperativists, about 20,000 are not affiliated with cooperatives, and less than 1,000 small-scale miners act independently as private, self-employed entrepreneurs. The national mineral production of small-scale mining was US$ 153 million in 1993, rising to US$ 170 million in 1994 (Priester, 1996). That production occurred under severe

social and economic conditions, due to the Bolivian Government undertaking a structural adjustment and a slimming down of State enterprises during that period and international agencies retreating from co-financing government promotion schemes. The combined effect of those events was the occurrence of an economic vacuum for the small-scale mining sector, since the assistance that it had once enjoyed was no longer available.

32. Recently, however, with large quantities of unused mining equipment from the State mining company COMIBOL, the Government of Bolivia is studying the possibility of privatizing those unused mining tools and equipment for the benefit of small-scale miners. In addition, a donor country is working with the Government and small-scale mining organizations to assist in the conceptualization of a non-government institution that would offer services to the sector, including the cooperative and small private mines.

II. ANALYSES OF NEW APPROACHES AND DEVELOPMENTS

A. Government

33. The mining industries in many developing countries and countries with economies in transition are currently in a period of transition following the dissolution of former State-controlled companies, with Governments allocating mineral resource development to the private sector. Accordingly, the role of Government is being redefined.

34. In the context of small-scale mining, the Government's role takes on great significance, since in most cases it is the only organized body with the ability to direct such activities to an efficient and sustainable course. In some instances, Governments are taking on the task of formalizing the sector. A major obstacle that impedes such formalization is the lack of a formal or permanent legal entity: together with the migratory nature of artisanal miners, this results in a problem in accountability, precluding any administrative control over the sector. Other obstacles include lack of funds for such administration, an established black market, and even traditional ties to illegal traders and drug dealers, who not only offer prompt payment but can often pre-finance operations.

35. To facilitate formalization, it has been recognized that registration procedures and regulatory compliance can be simplified for subsistence miners in order for them to operate in a favourable institutional and legislative regime. The question of transferable mineral rights, a principal issue for the artisanal miner, still needs to be answered in many developing countries. The Government is also in the best position to take on the duty of collecting detailed information and monitoring small-scale mining activities: such baseline data can help in the formulation of and modification of relevant policies.

36. Below are a few examples that describe some of the strategies that have been implemented, most of which include legal reform, increased recoveries through better equipment and training, licensed traders replacing government buying agencies, access to finance, marketing assistance and tax breaks.

37. In the Philippines, the Peoples Small-Scale Mining Law, passed in 1991, decentralized the permit process and placed it in the hands of local regulatory boards. The Law mandates that land be reserved exclusively for small-scale mining, while encouraging the cooperative as a basic working unit and the recipient of permits. There are provisions relating to government extension of technical and financial assistance, including such services as laboratories, mills and marketing services.

38. In the United Republic of Tanzania, the National Promotion Protection Act of 1990 has resulted in increased applications for prospecting, mining and dealing licences. Import restrictions were lifted for mining equipment to encourage the development of the sector. Even more significant was the initiation of open markets for dealers and international gem fairs, at which foreign buyers have the opportunity to establish direct business relationships with the gem dealers. In its legislative reform, the Government has paid particular attention to the small-scale miners. Of particular note is the removal of constraints formerly preventing the sale or transfer of mineral rights. Training is provided through the government-supported Madini Centre. In sum, the United Republic of Tanzania has addressed some of the main concerns of independent miners: security of tenure, transferability of mining rights and liberalized markets.

39. In Chile, the Empresa Nacional de Minería, known as ENAMI, is an autonomous public company that buys minerals and concentrates from small and medium-scale mines, serving as the marketing conduit for miners who would otherwise not be able to operate alone because of the heavy financial burden of direct small sales operations. ENAMI also serves as a source of credit and technical assistance, as well as carrying out exploration and development studies.

40. In Zimbabwe, government assistance takes the form of technical support, management services, plant hire schemes and advisers, with most of these services channelled through the parastatal Zimbabwe Mineral Development Corporation (ZMDC). ZMDC has been one of the main agents, together with local and international non-governmental organizations, responsible for the organized growth of the small-scale mining centre. The joint effort of the Government and non-governmental organizations is seen as a model for other countries to follow.

41. Ghana has also been acknowledged as a leader in the promotion of small-scale mining enterprises. The Small Scale Mining Project, financed by the World Bank and the Deutsche Gesellschaft für Technische Zusammenarbeit, administered new laws legalizing small-scale mining and provided technical and marketing assistance and simple licensing procedures. The revenues from fees collected are shared with the local authorities to help them control the activities in their areas. District centres were set up to register claims and offer technical advice. Mobile licensed dealers operated in the districts, facilitating rapid transactions. The institutional framework is supported by the increased revenue collected from the mining activities.

42. The approach used in Venezuela is similar to other developing countries, in that a parastatal organization is used as a vehicle for developing the sector. In this case, the Corporación Venezolana de Guayana (CVG) is entrusted with all gold exploration and development, including small-scale mining. To assert

control over activities, miners were organized into accountable bodies and special areas were reserved for artisanal mining. Fourteen small-scale mining zones were created; however, contracts were only awarded to entrepreneurs and cooperatives, and not to individual subsistence miners.

B. The private sector

43. Recently, many large companies seeking to establish operations in developing countries have concerned themselves with the small-scale mining issue, establishing specialized divisions that deal with community relations. Conflict resolution and the practice of placing the firm's presence in a position of mutually beneficial coexistence with the local community are now being incorporated into the development plans of many large-scale ventures. In some cases, artisanal miners are given marginal parts of the company's concession and/or are allowed to rework tailings, and some companies are also willing to extend credit services and financing.

44. The foreign-based private sector can, in cooperation with the Government, play a constructive role in the promotion of a small-scale mining industry, and can collaborate in the upgrading and improvement of artisanal activity. Its own direct involvement in small-scale mining may be limited, but its presence in a developing country has the potential to have a positive influence on smaller operations. Cooperation and assistance can take a variety of forms, including joint ventures with local entrepreneurs in mining and the provision of ancillary supplies and services; initiating complementary work and marketing relationships with indigenous small-scale producers; lending expertise to both the Government and producers; voluntarily returning marginal or small deposits to the national mineral inventory; and joint or sole sponsoring of demonstration projects, training programmes or mining schools. The private sector, both domestic and foreign, can also participate as equity owners and developers in marketing and fabrication ventures (value-added activities), as licensed buyers and as equipment manufacturers and distributors.

45. There are a number of countries in which complementary and non-competitive relationships of convenience have emerged between small miners and multinational companies. Companies have allowed artisanal miners to rework tailings and operate in abandoned sections of functional mines, as well as in marginal areas of the concessions, with agreements to sell at least part of the production to the company. Such possibilities are being utilized by the chromite cooperatives operating on the Great Dike in Zimbabwe.

46. In some instances, such relationships may have the effect of ultimately replacing artisanal and small commercial mines in the area with large-scale mechanized operations. However, they often provide local miners and claim-holders with a share of returns as well as employment and training opportunities.

47. Some of the major international mining houses have initiated contact with local mining cooperatives and communities holding mining rights or already operating on gold deposits with large production potential. For example, Mitsubishi made overtures to the miners' cooperative at Serra Pelada Brazil,

while Rio Tinto Zinc entered into an agreement with a San Luis cooperative in Ecuador.

48. In addition to the above-mentioned role of large multinationals, the formation of independent foreign investor groups with an interest in mining may facilitate new paths of development for small commercial operations. However, in many instances where investor groups have entered into partnerships, such attempts have been beset with difficulties, such as a lack of well-defined guidelines and administrative procedures for acquiring concessions, permits and imported equipment. Their tactical need to collaborate with local counterparts in management and risk-sharing, however, has the potential to contribute to the development of an indigenous mining sector. To date, most of the sustainable relationships between foreign entrepreneurs and local miners have been on the level of marketing, with foreign investors buying output from the miners, and in some cases, limited debt financing.

49. Artisanal miners are responsible for many precious metal and gemstone discoveries through their habit of effectively covering the ground. They can therefore exploit their abilities in proving deposits and then promoting them to major mining companies on a joint venture basis, an approach that has so far been underutilized.

C. Non-governmental organizations and lending institutions

50. The activities of local and international non-governmental organizations and development banks benefit the subsector by facilitating information flow and networking (markets, resources, technology etc.), participating in the development of technology, including its demonstration and diffusion in the field, strengthening local miners' associations and support groups, conducting training programmes, providing access to credit and loan funds, and in some cases, enhancing investment promotion and marketing. Because of the subsistence nature of much small-scale and most artisanal mining and the general lack of capital, international donors, technical assistance agencies and development banks can fill the role of sponsors and project executors in the areas of baseline studies and technology development. The compilation of mineral inventories and databases, the production of training materials and institution strengthening are activities that are critically in need of funding.

51. It should be noted that the involvement of State banks and lending institutions has often been characterized by disappointing results, the most frequent reason being failure on the part of the borrowers to repay their loans. That was one reason why the Banco Minero of Bolivia and Peru, a bank that did business with small-scale miners, was forced to close. Regional banks are usually better able to absorb such losses, and therefore may be in a better position to take risks and at the same time impose more stringent conditions. For example, the Asian Development Bank has had success with a loan programme for small-scale coal mining in the Philippines.

52. However, non-governmental organizations may be the most suitable agencies for financing small-scale projects, since they do not necessarily require a direct return on their funds to keep operating, with the exception of revolving

fund programmes. For example, the Proyecto de Investigación y Aplicación de Technolgía Apropriada, active in the Puno region in Peru, has aided the Santiago Ananea mining cooperative in improving mining techniques, which has enabled miners to raise recoveries and increase production: the increased revenue was ultimately used to create additional employment and upgrade public services. In Chile, the Centre for Mining and Metallurgy conducts extensive training programmes for small-scale miners; in Ecuador, the Cenda Foundation has had much success in providing technical assistance that is backed by community-wide efforts, emphasizing both community development and environmental management.

53. This type of non-governmental organization assistance can be used as a policy instrument for the formalization of artisanal mining activity by encouraging the formation of small-scale miners associations, which become receiving and distribution points for assistance programmes. Channelling aid through such organizations encourages migratory miners to register and become part of a formal arrangement; the Small-Scale Miners Association of Zimbabwe is a well-known organization in that category.

D. Local communities

54. In discussing the role of local communities, a distinction can be made between traditional mining and gold-rush mining. The former is in general more sustainable and orderly, and while much of the difference is due to the nature of the deposit being worked, the role of the community can make a large difference in the character of the mining activity. Issues that local communities can address are the relationship between the community and mining associations, the level of local government involvement, and the improvement of human resources and quality of life.

55. In Ghana, where traditional mining dates back to pre-colonial times, district mining committees have been set up comprised of all parties within the community that have a vested interest in the project, and they work with the local village councils. However, the role of such committees has often ended up being limited.

56. Mining villages in the United Republic of Tanzania have resulted in schools, health centres and shops being built by miners through self-help schemes organized by village leaders. Village authorities, including mining committees, maintain the security of their people.

57. However, when there is gold-rush mining, the role of the local community becomes more problematic. The transient nature of gold-rush mining can greatly disturb the life of a local community, many of whom are ill-prepared to deal with its effects, particularly communities made up of indigenous people. In such instances, there is a strong case for outside intervention.

E. Women

58. Estimates that measure the extent of women's participation in small-scale and artisanal mining activities indicate that women form a significant component

of the human resources in the subsector, and in some areas, are even the predominant participants. In Guinea, 75 per cent of artisanal miners are women, and women represent 50 per cent of the miners in Madagascar, Mali and Zimbabwe, and 40 per cent in Bolivia. In Ghana, 75 per cent of the salt traders of mined salt are also women.

59. Women take part as concession owners, hawkers and providers of services and goods, labourers, dealers and buying agents, and equipment owners who hire out such items as shovels, pans and food preparers. Women have traditionally performed the panning and extraction of such minerals as gold, diamonds and salt in Ghana. Their recognized entrepreneurial talent for trading and commerce is a part of their cultural heritage, and is the reason that women should be considered valuable contributors to artisanal mining.

60. In order to properly take into account both the actual and potential role of women in small-scale mining, assistance programmes should address the constraints on women's participation, and should work to provide women an even playing field. Constraints most often take the form of lack of literacy skills for the administrative procedures required for concession holding, the difficulties in obtaining credit access, and a lack of technical skills, which hampers the full potential of women's involvement, often relegating them to subsidiary roles in the mineral industry. One way for women to circumvent such difficulties is in the formation of cooperatives, since cooperatives have easier access to credit and can hire managers to deal with administrative and technical issues. This also translates into less demand on their time, which is shared by domestic responsibilities.

61. It has been noted that development assistance in small-scale mining has often been more accessible to men than to women. In order to resolve that disparity, a methodical approach towards recognizing and incorporating the needs of women should be taken with an aim to better designing such programmes. This should result in development projects that will be better structured to address human resource development as a whole and improve the living standards of all segments of the population. This entails collecting the relevant disaggregated data and discussing the possible remedial policies with the appropriate institutions and organizations. The two steps can be combined into a participatory data-gathering exercise, involving mining operators, labourers and government officials.

62. Discussions should be held with miners, government officials, lending institutions, and relevant non-governmental organizations on such issues as technical and managerial training, financial assistance and establishment of credit lines for women's groups, how to further empower women economically in mining ventures, safety and health for the children who accompany their mothers and women themselves, and other issues. Implicit in the steps is the involvement of women at all levels.

III. RECENT RESULTS OBTAINED IN SPECIFIC AREAS OF ACTIVITY

A. Safety and health in small-scale mines 3/

63. Mining is often a hazardous industry, more so than most. World wide, the formal mining sector employs only 1 per cent of the workforce but accounts for almost 8 per cent of fatal accidents at the workplace. The acknowledged underreporting of accidents makes the true toll likely to be even higher, particularly when one takes into account the fact that in many countries, the number of people working in small-scale informal or underregulated mines considerably exceeds the workforce in the larger-scale formal mining sector. Much of such employment is in rural areas, where it is important in alleviating underemployment. Unfortunately, however, many such jobs are precarious and are far from conforming with international and national labour standards. For example, child labour is not unknown in small-scale mines. Moreover, where there are statistics, they tend to show that the rate of occurrence of fatal accidents in small-scale mines is routinely six or seven times higher than it is in larger operations, even in industrialized countries. That is not to say that there are no safe, clean small-scale mines: there are, but they tend to be in the minority. The situation concerning non-fatal accidents and occupational diseases is even less certain because of the almost total lack of reliable data. Anecdotal evidence points to a sorry state of occupational health and safety at work sites themselves and also in neighbouring living and farming areas.

64. The geographically scattered nature of small-scale mining activity, its rapid rise during gold rushes, the lack of resources in mines inspectorates and a desire to avoid drawing attention to illegal or quasi-legal mining have perpetuated the lack of information on what is increasingly an activity of considerable economic importance. The fact that small-scale mines are generally outside the scope of activities of employers' and workers' organizations - which in the large, formal sector have rights, obligations and an influence on mining operations - means that the State has to shoulder all the responsibilities for managing small-scale mining.

65. The Convention on Safety and Health in Mines and an accompanying recommendation were adopted by the International Labour Conference in 1995 after two years of intense discussion. The Convention, when ratified, has the force of law. The recommendation sets out in detail an internationally agreed benchmark to guide national law and practice.

66. The Convention covers all mines. While there are provisions for excluding certain categories of mines, provided the overall protection afforded at such mines is not inferior to that which would result from the application of the Convention, plans for progressively covering excluded mines must be made. Since mines regarded as illegal would presumably be excluded for all time, the importance of bringing small-scale mines progressively into the formal sector increases.

67. The Convention specifies procedures for reporting and investigating mine disasters, accidents and dangerous occurrences, and the publication of relevant statistics. It covers employers' responsibilities to eliminate or minimize risks to the safety and health of workers in mines, as well as addressing the

rights and duties of mine workers in relation to safety and health. It refers to the establishment of inspection services to ensure the effective enforcement of its provisions.

68. It should be stressed that it is not necessary for a country to ratify the Convention for it to put its provisions into effect. Ratification is often a lengthy process and the provisions are already being included in collective agreements in several countries. In addition, the Convention sets minimum standards, and there are many mining countries that already have safety and health regulations that exceed the provisions of the Convention. The objective is to enable those countries that do not have adequate legislation to achieve an agreed minimum level and, in ratifying and implementing the Convention, to be included in the supervisory procedures of the International Labour Organization (ILO).

69. International and national mining trade unions are mounting an unprecedented effort to obtain quick and widespread ratification of the Convention. They also recognize that, because many small-scale mine workers are not represented by trade unions, they have a special role in helping such mine workers, many of whom work under very poor and dangerous conditions.

70. An important issue for many developing countries will be the strengthening of their competent authorities in order to ensure that the Convention's provisions are being followed. With infrastructure geared towards the well-developed formal mining sector, the sudden influx of small-scale mining activity would stretch the most efficient authorities, let alone those that are already poorly staffed and funded. External assistance may be required to bolster the size and technical competence of mining inspectorates. The ILO, in conjunction with other agencies, where appropriate, will assist in this regard.

71. It is hoped that the new mining Convention that has set the principles for national action on the improvement of working conditions of the mining industry will be widely ratified, and will lead to significant and lasting improvements in safety in mines large and small.

B. International conference on small-scale mining business in the north-western Russian Federation and international experience

72. An international conference on small-scale mining business in the north-western Russian Federation and international experience was held in Petrozavodsk, the Russian Federation, from 20 to 23 September 1995. The conference was organized by the Institute of Geology of the Karelian Research Centre and the Committee for Geology and Utilization of Mineral Resources of the republic of Karelia, and was supported by the government of the republic of Karelia, the International Agency of Small-Scale Mining (Canada) and the delegation of the Commission of the European Community to the Russian Federation. Karelia is an important non-metal ore region of the Russian Federation and a source of various industrial minerals, such as muscovite, feldstar, quartz, shungite, natural stone and carbonate rocks. The conference

was attended by 115 participants, including representatives from Bulgarian, British, German, Finnish and French companies and organizations.

73. In the 28 papers presented, the major issues covered were an analysis of the mineral potential of the Komi republic, as well as the Novgorod, Vologda and Murmansk regions, as a basis for the development of small-scale mining; geological-economic analysis of some types of mineral raw materials, their potential utilization in small-scale production and methods for computer-based assessment of deposits; analysis of the world-wide experience, market and regional conditions for the development of small-scale mining in the Russian Federation; experience accumulated by small companies; and the technology of mineral treatment. The conference also drafted a resolution that included a recommendation for the setting up of a public association of small-scale mining companies in the north-western Russian Federation and a request to the government of the republic of Karelia that it enact special laws for small-scale mining.

C. International round table on artisanal mining and the World Bank draft comprehensive strategy towards artisanal mining

74. An international round table on artisanal mining was convened in Washington, D.C., by the World Bank in May 1995. A group of 80 invited delegates from 25 countries attended. The delegates included representatives from international bodies, including the United Nations Secretariat, Governments, non-governmental organizations, international mining companies and the artisanal mining community itself.

75. The purpose of the meeting was to facilitate the exchange of views and experience of those associated with the subsector in different parts of the world, to assist delegates in developing strategies for dealing with this type of mining in their respective countries, and to provide input to the World Bank to formulate its own policy for the subsector. While there have been previous international seminars and meetings that have had artisanal mining in their agendas, such as a United Nations interregional seminar on the theme "Guidelines for the development of small/medium-scale mining", held in 1993 in Harare, the round table is the first international meeting to be convened expressly to discuss the problems of the informal mining sector: previous international conferences considered artisanal mining within the broader scope of small-scale mining.

76. The emphasis on artisanal mining is consistent with the objectives of the main international development funding organizations, such as the World Bank objective, stated at the round table, to alleviate poverty and improve living standards through sustainable growth and investment in people, and the United Nations Development Programme (UNDP) objectives of poverty alleviation, environmental protection, job creation and promotion of the advancement of women. It is also consistent with the trend in many developing countries, particularly in Africa, of a significant increase in the growth of the informal sector.

77. Based upon the discussions, conclusions and recommendations of the round table, a comprehensive strategy towards artisanal mining was prepared in draft form by the World Bank in August 1995. This document is a proposed strategy for assisting artisanal mining within the context of a mining sector reform programme aimed at improving the policy, regulatory and institutional conditions for attracting private mining investment. The overall objective of such assistance is to transform informal mining into environmentally sustainable, legally structured, formal mining.

78. The first priority of the proposed strategy is to create a conducive environment for private mining investment by reforming mining legislation and taxation regimes and strengthening public mining institutions. Once such proper regulatory and institutional capacities are in place, the strategy calls for a baseline survey to assess the problems and constraints of the artisanal mining sector so as to determine target areas for assistance. An action programme can then be prepared, based on the survey results, with a view to: (a) establishing enabling conditions for artisanal mining, (b) alleviating technical and financial constraints, and (c) improving the environmental, living and working conditions of miners. The action programme will then call for a partnership and establishment of roles between the Government, non-governmental organizations, artisanal miners' associations, international donor agencies and international mining companies.

IV. CONCLUSION AND RECOMMENDATIONS

79. Small-scale and artisanal mining is a significant economic activity that has seen a world-wide resurgence over the past 25 years, particularly in artisanal mining. Serious efforts are still needed in small-scale mining regulation and promotion, particularly to mitigate environmental damage, minimize social upheavals and curb smuggling.

80. Artisanal mining should be legalized and formalized to promote its growth. A legal framework that recognizes the existence and characteristics of small-scale and artisanal mining is a prerequisite for its formalization and for limiting its negative impacts. In particular, artisanal mining needs to be mainstreamed, and in many cases, alternative employment opportunities need to be created for these miners so as to ease the pressure on the natural resources and the environment.

81. Governments, local communities, the private sector, non-governmental organizations and the international community have significant roles to play in improving the lives of artisanal miners and their dependants. As many innovative solutions have shown, assisting miners and their families means more than providing assistance from a mining perspective. Confronting mining issues, such as the technical, legal and financial constraints faced, as well as environmental pollution and degradation, is necessary but not sufficient for solving the problems inherent in artisanal mining, since one of the problems associated with this type of mining is that it may create immediate income but often does not create improved living conditions or social development for the regions in which it occurs.

82. It is recommended that an approach be adopted that expands the way artisanal mining is viewed from a sectoral, mining issue into a multisectoral issue of socio-economic development. While experts in mining are well aware of the benefits and problems of artisanal mining, the multisectoral approach would include community development sociologists, economists, legal experts and public health experts so as to generate multisectoral development initiatives. Assistance in such areas as alternative income-generating activities, health, education, women's empowerment and environmental awareness provide a necessary complement to mining assistance that can increase productivity and income while reducing environmentally unsound mining practices. It is also a more holistic and people-centred development approach that would expand the audience of those receiving information about artisanal mining, and would make small-scale mining assistance more palatable to Governments and donors.

83. Small-scale mining should therefore be viewed and approached from the broader view of socio-economic development and poverty eradication. For a large number of the people of the world involved in artisanal mining, mining activities serve as a safety net by providing income during difficult economic times. Since most of these activities occur in rural areas, artisanal mining is an effective weapon against rural poverty and rural-to-urban migration, and should be supported as such. When a Government moves to create a more enabling environment for artisanal miners, it is also increasing the access of its people to an income safety net and their ability to deliver themselves from poverty. Assistance to the sector can also serve as an important conduit for providing much needed social assistance to the people and areas concerned.

84. This conclusion is offered as a basis for discussion so as to enable the Committee to delineate the priority areas for future action related to small-scale and artisanal mining. Given the continuing importance of small-scale and artisanal mining in the developing countries and the countries with economies in transition, and the multifaceted needs of the sector, the Committee may wish to keep under review the opportunities available and efforts under way in this sector. In particular, given the importance of artisanal mining as an economic safety net, artisanal mining may provide an area for increased action in holistic, multisectoral socio-economic development.

Notes

1/ Contributions concerning the activities in small-scale mining of the Economic Commission for Africa, the Economic Commission for Latin America and the Caribbean, the Economic and Social Commission for Asia and the Pacific, and the United Nations Industrial Development Organization are also gratefully acknowledged. Those contributions have been included in the report of the Secretary-General on technical cooperation activities of the United Nations system in mineral resources (E/C.7/1996/7).

2/ The Committee originally requested a quantitative evaluation of the importance of small-scale mining in developing countries and countries with economies in transition. However, given the general unavailability of

quantitative data in this area, the present evaluation has had to be made based on the limited information available.

3/ The information on which this section is based was provided by the ILO.

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